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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/914,650	02/27/2002	Eric Yijing Zhang	Q66048	9665

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EXAMINER	
KINNEY, ANNA L	
ART UNIT	PAPER NUMBER
1731	

DATE MAILED: 01/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/914,650	ZHANG ET AL.	
	Examiner	Art Unit	
	Anna Kinney	1731	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 December 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☒ Claim(s) *8-10* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed December 28, 2005 have been fully considered but they are not persuasive.

In response to applicant's argument that the temperature and oxygen access conditions would be understandable to a person skilled in the art based on the specification, the Examiner disagrees. According to Figure 1, downstream of the most downstream refiner and upstream of the screening department (as recited in claim 1) includes conduit or a screw conveyor, a cyclone, a slusher, and a storage vessel. The specification describes temperatures ranging from 70°C at the storage vessel (p. 14, line 14) to potentially as high as 160°C at the refiner outlet (p. 8, line 31). Smook (Smook, G.A., Handbook for Pulp & Paper Technologists, TAPPI, 1982) indicates that dithionite bleaching is typically operated at 60°C (p. 171, col. 2, lines 32-33). Although not claimed, the Examiner points out that the first example bleaches finished pulp at about 60°C with sodium dithionite (p. 14, lines 28-31). The Examiner cannot determine how one of ordinary skill in the art would be able to discern what temperature range would be indicative of a drastic temperature condition. As for oxygen access, one of ordinary skill in the art would expect a much different oxygen access at various points described in the specification, e.g. oxygen would likely be provided more access at a slusher than inside a conduit. Therefore, the Examiner cannot determine the metes and bounds of patent protection desired by the applicant.

In response to applicant's argument that a temperature that is "very high... from a bleaching aspect" and "low" concentration are supported by the specification, the Examiner disagrees. As discussed above, the Examiner cannot determine how one of ordinary skill in the art would be able to discern what conditions qualify as "very high", even from a bleaching aspect. As for concentration, in the same areas as discussed above, the consistency disclosed in the specification ranges from 2.5% (p. 14, lines 13-14) to 40% (p. 14, lines 6-8). Smook defines low consistency as 2.5-3.5% (p. 161, col. 1, lines 15-18). Again, the Examiner cannot determine the metes and bounds of patent protection desired by the applicant, or how one of ordinary skill in the art would discern the temperature or consistency ranges.

The Examiner notes that the specification does not overcome the lack of antecedent basis rejections.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). The applicant has failed to provide a substantive argument explaining why it would not be obvious to combine the references used by the Examiner.

In response to applicant's argument that Madison et al does not disclose a drastic condition with respect to temperature or oxygen access, Madison discloses that the pulp has been heated by the refiner, which speeds bleaching (col. 2, lines 26-29). Although no temperature is disclosed, the Examiner must assume that Madison considered a temperature within the range of the typical bleaching temperature described by Smook (60°C, as discussed above) and the temperature of pulp discharged from a refiner. The Examiner has no reason to consider this range to be different than that suggested by the instant specification. Madison simply does not address oxygen access.

In response to applicant's argument that West does not disclose minimized oxygen access at the location of bleaching, West does disclose that the pulp is bleached without undue exposure to air (col. 3, lines 13-15). The Examiner considers this to mean that oxygen access is minimized.

In response to applicant's argument that the Examiner has ignored features of Madison, West, and Grimsley, they amount to a general allegation because applicant's arguments fail to specifically point out any contrary teachings in the references.

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The following title is suggested: Method for bleaching mechanical and chemithermomechanical pulp downstream of refiner and upstream of screening.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1 through 13 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 1 contains the limitations "drastic condition from the aspect of temperature", and "minimized oxygen access". The disclosure contains no indication as to what constitutes a "drastic condition from the aspect of temperature", or "minimized oxygen access". The disclosure indicates that a reductive bleaching agent can be added anywhere between the last refiner in a series and the screening department. It further indicates that the temperature in the last refiner can be expected to range from 130 to 160°C. Based on the temperatures described at the outlets of other process equipment in the disclosure, the Examiner anticipates the temperature at the outlet of the refiner to be approximately 130°C. The last temperature range cited before the screening department is 70 to 80°C at the latency chest. Therefore, the Examiner must consider drastic temperature conditions to be anything within the range of 70 to 130°C. Claims 2 through 13 depend upon claim 1, and are therefore also subject to this rejection.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1 through 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitations "the given drastic condition" and "the given minimized oxygen access" in lines 14 and 15 of the claim. There is insufficient antecedent basis for this limitation in the claim. No previous discussion of a drastic condition or oxygen access is provided in the claim. Claims 2 through 13 depend upon claim 1, and are therefore also subject to this rejection.

Claim 1 lists a number of steps, some of which are optional. The Examiner finds the recitation of "a steam separator" unclear because the steps are not laid out in such a way as to clearly delineate a steam separator as a separate step from the preceding optional chemical treatment system. The Examiner suggests identifying each distinct step or choice of steps with a number or letter (i.e., (i) or (a)), or providing a semicolon at the end of each distinct step or choice of steps. Claims 2 through 13 depend upon claim 1, and are therefore also subject to this rejection.

The terms "very high" and "low" in claim 11 are relative terms which render the claim indefinite. The terms "very high" and "low" are not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Therefore, the temperature and concentration of the pulp suspension at the

location of bleach addition and immediately downstream are indeterminate. Claim 13 depends upon claim 11, and is therefore also subject to this rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1 through 7 and 11 through 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over ADMITTED PRIOR ART (Jepson claim 1 of instant application, page 5 of disclosure, Example 1 of disclosure, pages 13 to 15, and Figure 1) in view of MADISON et al (U.S. Patent 3,186,899), WEST (U.S. Patent 3,467,574), and GRIMSLEY et al (U.S. Patent 4,863,564).

With respect to claim 1, the ADMITTED PRIOR ART is an implied admission that the subject matter of the preamble is the prior art work of another, see MPEP 2129 III. The ADMITTED PRIOR ART discloses a method for manufacturing bleached mechanical and chemithermomechanical pulp wherein a starting material in form of lignocellulose material, preferably wood in chip form, is caused to pass through at least one preheater or through a chemical treatment system, and a steam separator, and then through a single refining stage containing one refiner or two refiners with each refiner in the single refining stage being directly followed by steam separation and with only steam separation existing between refiners, in which the lignocellulose material is converted to a pulp suspension which, subsequent to the most downstream of said

steam separation, is passed at least to one storage vessel and to a screening department from which the major part of the pulp suspension is taken out as an essentially finished bleached product or is taken out and passed to further treatment stages; and in which reductive bleaching agent as the only bleaching agent is added to the advancing pulp suspension without the use of a bleaching tower or like means (Jepson claim).

The ADMITTED PRIOR ART does not disclose expressly adding the bleaching agent at a location downstream of the most downstream refiner and upstream of the screening department; and bleaching said pulp under the given drastic condition from the aspect of temperature and the given minimized oxygen access at said location and immediately downstream of said location.

MADISON et al discloses adding the bleaching agent (col. 2, lines 24 to 25) at a location downstream of the most downstream refiner (col. 2, lines 25 to 26) and upstream of the screening department (col. 2, lines 2 to 5). MADISON et al does not disclose expressly bleaching said pulp under the given drastic condition from the aspect of temperature and the given minimized oxygen access at said location and immediately downstream of said location.

WEST discloses bleaching pulp under the drastic condition of temperatures ranging from 65 to 100 °C or more (150 to 212 °F; col. 3, lines 6 to 11 and 17 to 23). WEST does not disclose expressly minimized oxygen access at said location and immediately downstream of said location.

GRIMSLEY et al discloses minimized oxygen access at said location and immediately downstream of said location (Abstract, lines 3 to 6).

With respect to claim 2, ADMITTED PRIOR ART discloses adding complexing agent to the lignocellulose material (page 13, lines 27 to 29) upstream of said refiner.

With respect to claim 3, ADMITTED PRIOR ART discloses passing the pulp suspension to two refiners in series (Figure 1, items 6 and 10, and page 14, lines 1 to 5).

With respect to claim 5, ADMITTED PRIOR ART discloses also passing the pulp suspension to a slusher (latency pulper) located immediately upstream of the storage vessel (the latency chest) (Figure 1, items 14 and 17, and page 14, lines 9 to 12).

With respect to claim 6, ADMITTED PRIOR ART discloses that a pump would be placed immediately downstream of the slusher (page 5, lines 6 to 7). Therefore, the Examiner assumes that the slusher of Example 1 is connected with a pump. Furthermore, ADMITTED PRIOR ART discloses that it is conventional to deliver the bleaching agent to a pump (page 14, lines 28 to 30, and page 15, lines 9 to 10). Therefore, the Examiner asserts that at the time of the invention, it would have been obvious to a person skilled in the art to add the bleaching agent to the pulp suspension in a pump located in connection with the slusher, said pump being caused to transport the pulp suspension to the storage vessel in a pipe.

With respect to claim 7, ADMITTED PRIOR ART discloses causing reject pulp suspension from the screening department (Figure 1, item 19) to pass through a refiner (Figure 1, item 28) and thereafter through a slusher (Figure 1, item 31) whereafter said

reject pulp suspension is finally fed into the main pulp suspension flow, in the storage vessel (the latency chest) (Figure 1, item 17) (page 14, lines 18 to 21 and line 32 to page 15, line 3)).

With respect to claim 12, ADMITTED PRIOR ART discloses that the bleaching agent is dithionite (page 14, line 29).

The ADMITTED PRIOR ART does not disclose expressly adding complexing agent to the pulp suspension immediately upstream of and/or in said second refiner; that the temperature of the pulp suspension is very high from a bleaching aspect at the location at which the bleaching agent is added and immediately downstream of said location or that the solid content or concentration is low at said location; or that the temperature of the pulp suspension is 80 to 90°C at the location at which the bleaching agent is added and immediately downstream of said location, or that the solid content or concentration is 2 to 4% at said location.

With respect to claim 4, WEST discloses adding complexing agent to the pulp suspension (col. 6, lines 25 to 28) immediately upstream of and/or in said second refiner (col. 4, lines 14 to 22).

With respect to claim 11, WEST discloses that the temperature of the pulp suspension is very high from a bleaching aspect at the location at which the bleaching agent is added and immediately downstream of said location (col. 3, lines 54 to 64) and in that the solid content or concentration is low at said location (col. 2, lines 22 to 23).

With respect to claim 13, WEST discloses that the temperature of the pulp suspension is 65 to over 100°C (col. 3, lines 54 to 64), which contains the claimed

range of 80 to 90°C, at the location at which the bleaching agent is added and immediately downstream of said location, and in that the solid content or concentration is 3 to 5% in conventional hydrosulfite bleaching (col. 2, lines 22 to 23), which contains one specific point within the claimed range of 2 to 4%, at said location.

The ADMITTED PRIOR ART, MADISON et al, WEST, and GRIMSLEY et al are analogous art because they are from the same field of endeavor, that of bleaching mechanical pulp. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to apply a bleaching agent at the location described by MADISON et al (between the last refiner and the screening stage) to the pulp manufacturing method of the ADMITTED PRIOR ART under drastic temperature conditions, with the addition of a complexing agent, and at a low solid concentration as taught by WEST, and to minimize the access of oxygen as taught by GRIMSLEY et al, to obtain the invention as specified in claims 1 through 13.

The motivations for doing so would have been that the bleaching reaction is automatically speeded as a result of the pulp having become heated by the work done on it during the second refining stage (Madison, col. 2, lines 26 to 29); the temperature of the material is increased so that outgassing of oxygen-containing vapors deleterious to reduction bleaching takes place (West, col. 1, lines 15 to 17); it has been found to be highly desirable to maintain the temperature of the pulp above 150°F during the screening and cleaning operations to prevent any substantial brightness reversion (West, col. 5, lines 66 to 69); the presence or introduction of substantial amounts of oxygen into the pulp would rapidly destroy the effectiveness of the reducing bleaching

agent (West, col. 3, lines 51 to 54); bleaching under anaerobic conditions and subsequently handling the bleached pulp under anaerobic conditions thereafter produces a significantly higher paper brightness which is retained after storage of the finished paper (Grimsley et al, col. 3, lines 1 to 8); dilution of the pulp has been found to be desirable in order to prevent brightness reversion which has been found to occur to a certain extent if the pulp is stored at high consistency (West, col. 5, lines 51 to 54); and chelating agents may be incorporated into the pulp prior to incorporation of the reducing bleaching agent to improve the stability of the hydrosulfite (WEST, col. 6, lines 25 to 28, and lines 34 to 35).

Allowable Subject Matter

Claim 8 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

Claims 9-10 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance: the primary reason for allowance is the inclusion of the limitation regarding adding bleaching agent to reject pulp after the refiner and before introducing the pulp to the main flow.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anna Kinney whose telephone number is (571) 272-8388. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ALK

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PRIMARY EXAMINER